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ABSTRACT

A study of predictors of reading comprehension in English as a second language had as subjects 33 adult students in full-time intensive English classes at the intermediate and advanced levels of reading. Each was tested with an oral and a written language inventory, and each response was recorded as syntagmatic or paradigmatic. Other tests included a standard nonverbal intelligence measure, a cloze test with 100 blanks, and a reading comprehension test containing 40 questions based on seven passages from various sources. The items in the reading test assessed word meaning in isolation and in context, inference, key points of the passage, and evaluation. The results suggest that a language-free intelligence measure is a better predictor of scores achieved on a cloze test and a reading comprehension test than responses to oral and written language inventories for an adult second-language subject pool. It is suggested that the responses to the language inventories are not as consistent and homogeneous as the intelligence test data because these intensive English students have not yet completed the syntagmatic-paradigmatic shift in English that usually occurs in native English speakers between the ages of 5 and 7 years. The oral and written language inventories and 17 tables are appended. (MSE)

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Using Oral and Written Language Responses from Two Language Inventories and Data from a Non-Verbal IQ Test to Predict ESL Reading Performance

Kyle Perkins, Charlotte Groff, and Paul Angelis

Abstract

Oral and written responses were elicited from two langauge inventories, and each response was categorized as paradigmatic or syntagmatic. Data were also elicited from a non-verbal IQ test, a cloze test, and a reading comprehension test. There was no significant difference between the paradigmatic and syntagmatic responses for the subject pool, indicating that the syntagmatic-paradigmatic shift observed in L1 children had not taken place. Different psycholinguistic explanations are offered.

In general, L2 subjects who were predominantly paradigmatic scored higher on the IQ measure and the reading comprehension test, a finding similar to L1 studies. The predominantly syntagmatic subjects had higher cloze scores. The non-verbal IQ measure was more consistent in predicting cloze and reading comprehension scores than the responses to the language inventories.

Introduction

There is a considerable corpus of psycholinguistic research with word association tests (WAT). The basic technique associated with WATs is to provide subjects with a stimulus word and to ask them to think of the first word that comes to their minds. Responses to WATs can be categorized as syntagmatic or paradigmatic. A syntamatic response to a stimulus word is a word that would follow the stimulus word in normal speech like "run-quickly" or "yellow-car." A paradigmatic response is a word that belongs to the same form class as the stimulus word like "black-white," "pretty-ugly," or "contractor-builder." Paradigmatic responses can illustrate a superordinate relationship "apple-fruit," a coordinate relationship "arm-leg," a contrastive relationship "black-white," or a part-whole relationship "branch-tree."

WATs, beginning with one of the earliest, Thumb and Marbe (1901), have shown that adults give primarily paradigmatic reponses while children give primarily syntagmatic reponses. Adult word-association patterns are very homogeneous and predictable, but children's associations are less homogeneous (Clark, 1970; Clifton 1967; Deese 1962, 1965; Entwisle, Forsyth and Muus, 1964).

There has been some L1 (but no L2) research on the relationship between verbal word association resonses and both scores on IQ measures and scores on reading tests. Bickley, Dinnan, and Bickley (1970)

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reported that 19-20 year-old subjects who gave primarily paradigmatic responses on a verbal language inventory scored higher on the Otis Quick Score Mental Maturity Test than subjects who gave primarily syntagmatic responses. Bickley, Bickley, and Cowart (1970) reported that fourth-grade subjects who were predominantly low syntagmatic respondents scored higher on the California Reading Test than subjects who were predominantly high syntagmatic respondents.

Since there has been no L2 research reported on these relationships, the purpose of this investigation is to determine whether there is a relationship between oral and written responses, either paradigmatic or syntagmatic, to a language inventory task and scores achieved on an intelligence test, a cloze test, and a reading comprehension test. Oral and written elicitation methods were employed to dertermine if there would be a method effect.

Procedures

Subjects . This research was conducted at the Center for English as a Second Language at Southern Illinios University at Carbondale. Thirty-three adult students enrolled in full-time intensive English classes at the Center served as unpaid volunteers for the study. Nineteen subjects were enrolled in intermediate-level reading classes; the remaining fourteen, in advanced-level reading classes.

Materials . Each subject was tested individually with the Oral Language Inventory (Appendix A) and the Written Language Inventory (Appendix B). Each response from both inventories was classified as either syntagmatic or paradigmatic and so recorded.

The Raven's Standard Progressive Matrices was used as a measure of intelligence. The Raven's is a non-verbal IQ test which requires the subject to look at a pattern with a portion missing and to select from among eight options the one which best completes the larger pattern. The Raven's contains five sections with twelve items per section.

The cloze test contained 100 blanks with each deletion occurring every seven words.

The reading comprehension test contained 40 questions which were based on seven passages taken from textbooks, stories, humorous writings, scientific reports, and other types of reading material. The items assessed word meaning in isolation and in context, inference, key points of the passage and evaluation.

Analysis . Table 1 presents statistics for all measures and for all subjects. Table 2 contains the results of various parametrics t-tests which analyze the differences between the means for the syntagmatic and paraigmatic responses elicited orally and written.

The data from each language inventory and the Raven's were ranked from high to low and split at three different criterion points, forming high and low groups for each of the criteria. The three criteria were (1) at the median (Tables 3-7), (2) at the mean (Tables 8-12), and (3) at $\pm$ SD (Tables 13-17). The high and low group means were submitted to parametric and non-parametric t-tests to determine whether there was a significant difference between the means. Since small samples were

encountered in the analyses of data from each of the two different proficiency strata, the Mann-whitney U-test, a non-parametric alternative to the t-test for two independent samples, was used. For some of the variables, the sample sizes were too small to employ the U-test, and, hence the gaps in some of the tables. (The U-test requires n sizes of at least 3).

There were substantial numbers of tie scores for some of the variables so the researchers calculated the normal approximation with tie correcton discussed in Roscoe (1975). It was not possible to calculate the z statistic for some variables due to small sample sizes. (The normal approximation with tie correction requires a common sample size of at least 5.)

Results and Discussion

An inspection of the means of the written and oral reponses in Table 1 indicates that the L2 subjects as a group gave similar numbers of syntagmatic and paradigmatic responses from both elicitation methods. The t-values in Table 2 show no significant differences between paradigmatic and syntagmatic responses. There seems to be no indication of method effect (the oral inventory entailed listening and speaking and the written inventory, reading and writing), on paradigmatic or syntagmatic preference.

The results of this L2 study run counter to previous L1 WAT studies which indicate that adults are predominantly syntagmatic. Crammer (1968) has discussed the so-called syntagmatic-paradigmatic shift that occurs in L1 children between the ages of 5 and 7. According to Crammer, syntagmatic responses decrease while paradigmatic responses increase fron about the age of 5 and 18. The shift in L1 children from primarily syntagmatic to primarily paradigmatic responses usually occurs between ages 5 to 7.

What explanations can one offer to account for the fact that adult L2 subjects are not yet predominantly paradigmatic? Perhaps previous research can provide some insights. Galton (1879-1880) was one of the first researchers to suggest that a theory of contiguity could explain how paradigmatic reponses develop. Galton believed that frequently evoked responses had previously been placed into contiguity with their stimuli. In terms of grammar and vocabulary instruction, drill, and exercise material, these adult L2 subjects may rarely have seen commonly evoked paradigmatic responses placed into contiguity with the stumuli which the paradigmatic responses can replace in normal speech.

Ervin (1963) has claimed that words in the same form class can be placed into contiguity when a subject anticipates what s/he will hear (or read) next. When the subject's anticipations are wrong, contiguity results. By analogy then, one can speculate that in these L2 subjects' exposure to English, the number of times any particular paradigmatic response has been erroneously anticipated for its stimulus has not been high enough to establish a paradigmatic preference.

The syntagmatic-paradigmatic shift may be related to the process

of "de-centering," a process related to stages of cognitive development discussed by Piaget (1967). According to Piaget, children reach the concrete operational stage of cognitive development about age 7. Preoperational children tend to focus their attention on one facet of something and they cannot attend to more that one facet at a time: they cannot de-center. Also, preoperational children do not comprehend the relation between part and whole, i.e., class inclusion, and do not have the ability to think backward and forward at the same time, i.e., seriation. It may be the case that adult L2 subjects who are not yet balanced bilinguals may not be de-centered in the target language.

Perhaps the most convincing explanation for the lack of adult L2 paradigmatic responses can be found in research by Katz and Fodor (1963) and McNeill (1966). Katz and Fodor suggested that the meaning of a word can be analyzed into semantic markers or components. A common paradigmatic response forms a kind of minimal pair or minimal contrast with its stimulus which results in a shift of one marker, e.g., "man-woman." "Man" and "woman" share the semantic markers (adult), (human), and (living) but differ in (sex). McNeill stated that L1 children have incomplete lists of semantic markers. By analogy, adult L2 subjects with their incomplete, interim grammars and smaller (than L1 children's) lexicon also lack complete lists of semantic markers. If adult L2 subjects do not command a large number of a word's markers and features, the set of responses that minimally contrast with the stimulus may be so large that it contains words belonging to different form classes.

The generalization seems to be that word associations result from mental operations that depend on language competence and world experience and knowledge. L2 subjects may not know a long list of synonyms or antonyms for a stimulus word, but they can recognize its part of speech and then produce a syntagmatic response that forms a collocation.

The significant differences between the high and low group means displayed in Tables 3-17 are the following:

High Oral Syntagmatic Group:
- significantly lower reading scores by the median criterion for the intermediate stratum;
- significantly lower Raven's scores by all criteria for all subjects and advanced stratum;
- significantly higher cloze scores by median and ± 1SD criterion for all subjects and advanced stratum;

High Written Syntagmatic Group:
- significantly higher Raven's and reading comprehension scores by the mean criterion for the intermediate stratum;

High Oral Paradigmatic Group:
- significantly higher reading comprehension scores by the median criterion for the intermediate stratum;
- significantly higher Raven's scores by the ± 1SD criterion for all subjects;

High Written Paradigmatic Group:
- significantly higher reading comprehension scores by the ± 1SD criterion for all subjects;

High Raven's Group:

significantly higher cloze scores by all criteria for all subjects and both strata;

significantly higher reading comprehension scores by all criteria for all subjects and both strata;

significantly lower written syntagmatic scores by the mean criterion for the advanced stratum.

To review, Bickley, Dinnan, and Bickley (1970) found that adult L1 subjects who were predominantly paradigmatic scored higher on an IQ measure. Bickley, Bickley, and Cowart (1970) reported that L1 4th graders who were predominantly paradigmatic scored higher on a reading comprehension test.

The L2 results from the study parallel the previously cited L1 studies but for the High Written Syntagmatic Group which had higher Raven's and higher reading comprehension scores for the intermediate stratum and the High Oral Synatgmatic Group which had higher cloze scores. The Raven's was the most consistent predictor for both the cloze and reading comprehension data for all strata and by all criteria.

The unexpected results with the written syntagmatic responses could be due to an elicitation method effect (reading and writing versus listening and speaking) and the possibility that the intermediate group at the high end of the scoring continuum had not proceeded as far as the advanced subjects on the syntagmatic-paradigmatic shift.

That the high oral syntagmatic group had higher scores on the cloze test may be explained by the nture of the cloze procedure itself. The rationale for using the cloze procedure to assess reading comprehension is that if a subject comprehends the content and organization of a reading passage, s/he is better able to utilize the redundancy in the reading passage to retrieve the deleted words. Redundancy in a passage is more associated with syntagmatic structures than paradigmatic minimal pairs.

That the Raven's was the most consistent predictor of cloze and reading comprehension scores can be explained by the neurological bases that determine how a plausible text structure is generated. Fisher and Smith (1977) stated that a reader "generates a fabric which relates sentences to each other and to the larger fabric of which they are a part." Fisher and Smith further claimed that there are four aspects related to the generation of a plausible text structure: prior knowledge, logical skills, systematic integration and active processing--information and skills related to neurological activity in the frontal lobes. Luria (1966) and Pribram (1971) noted that the frontal lobes organize behavior directly during serial tasks. The frontal lobes have supervisory or executive tasks that seem to involve five processes, according to Macworth (1977): (1) external visual scanning using hypotheses to establish external context--a grouping of elements; (2) transforming this external context into an internal context--a temporal neurological organization of brain events occurring in short-term memory; (3) requests from short-term memory to long-term memory for subroutines; (4) further comparisons between internal

short-term memory contexts and growing external semantic and syntactic trends; (5) decisions to change or keep current subroutines if expected or actual events are diverging or converging. It stands to reason that a subject with higher intelligence would be more adept at active processing, logical skills, and systematic integration and hence the better reader.

In sum, the results of this investigation show that a language-free intelligence measure is a better predictor of scores achieved on a cloze test and a reading comprehension test than responses to oral and written language inventories for an adult L2 subject pool. The responses to the language inventories are not as consistent and homogenous as the IQ data because, apparently, these intensive English students have not yet completed the syntagmatic-paradigmatic shift in English which usually occurs in L1 English speakers between the ages of 5 and 7.

APPENDIX A

Oral Language Inventory[2]

NAME_____

CLASS_____

Native Language_____

INSTRUCTIONS: I am going to read a list of common words to you. As I read each word, tell me the first word that comes into your mind.

1.	in	16.	morning
2.	she	17.	pay
3.	go	18.	laugh
4.	up	19.	front
5.	old	20.	short
6.	day	21.	poor
7.	kind	22.	happy
8.	life	23.	hot
9.	work	24.	South
10.	father	25.	easy
11.	high	26.	pretty
12.	city	27.	against
13.	war	28.	wife
14.	open	29.	smile
15.	white	30.	foreign

APPENDIX B

Written Language Inventory

Name_____

Class_____

Native Language_____

INSTRUCTIONS: Below is a list of common words. For each word, write down the first word that comes to mind as you read that word.

1. from	_____	16. beginning	_____
2. we	_____	17. buy	_____
3. walk	_____	18. speak	_____
4. over	_____	19. sign	_____
5. true	_____	20. small	_____
6. book	_____	21. free	_____
7. prince	_____	22. full	_____
8. room	_____	23. heavy	_____
9. run	_____	24. bottom	_____
10. friend	_____	25. soft	_____
11. top	_____	26. tall	_____
12. car	_____	27. strange	_____
13. game	_____	28. team	_____
14. push	_____	29. cry	_____
15. red	_____	30. same	_____

TABLE 1

Summary Statistics

Variable	No. of Subjects	No. of Items	Mean	S.D.	KR-20 r_{tt}	100 Item r_{tt}
Oral Syntagmatic	33	30	14.30	6.94	.88	.96
Written Syntagmatic	33	30	15.03	6.45	.86	.95
Oral Paradigmatic	33	30	15.48	7.02	.88	.96
Written Paradigmatic	33	30	14.55	6.51	.86	.95
Raven's	33	60	50.03	6.60	.87	.92
Cloze	33	100	24.63	11.48	.93	.93
Reading Comp.	33	40	15.93	5.85	.77	.89

TABLE 2

t-Tests: Syntagmatic and Paradigmatic Responses

	Mean	Difference Between Means	t-value	df	Level of Sign.
Oral Syntagmatic	14.30				
Written Syntagmatic	15.03	.73	1.03	32	n.s.
Oral Paradigmatic	15.48				
Written Paradigmatic	14.55	.93	1.29	32	n.s.
Oral Syntagmatic	14.30				
Oral Paradigmatic	15.48	1.18	.48	32	n.s.
Written Syntagmatic	15.03				
Written Paradigmatic	14.55	.48	.21	32	n.s.

TABLE 3

Parametric and Nonparametric t-tests

Median: Criterion for High and Low Groups

Oral Syntagmatic

Variable	High Oral Syntagmatic Mean	Low Oral Syntagmatic Mean	Difference Between Means	t-value	Level of Sign.	U value	Level of Sign	z	Level of Sign.
					All Subjects				
Raven's	50.50	50.31	.19	.08	n.s.				
Cloze	26.25	24.21	2.09	.47	n.s.				
Read. Comp.	14.50	16.57	2.01	.94	n.s.				
					Intermediate				
Raven's	51.86	51.67	.19			39	n.s.	-.255	n.s.
Cloze	23.43	24.67	1.24			40	n.s.	-.169	n.s.
Read. Comp.	11.57	15.17	3.60			29.5	n.s.	-1.059	.01
					Advanced				
Raven's	46.17	48.87	2.70			16.5	n.s.	-.4.57	.01
Cloze	28.33	22.62	5.71			16	n.s.	-1.052	.01
Read. Comp.	18.33	18.75	.42			21.5	n.s.	-.32	n.s

TABLE 4

Parametric and Nonparametric t-tests

Median: Criterion for High and Low Groups

Written Syntagmatic

Variable	High Written Syntagmatic Mean	Low Written Syntagmatic Mean	Difference Between Means	t-value	Level of Sign.	U-value	Level of Sign.	z	Level of Sign.
					All subjects				
Raven's	50.10	49.57	.53	.21	n.s.				
Cloze	27.10	23.95	3.15	.71	n.s.				
Read. Comp.	15.80	15.57	.23	.11	n.s.				
					Intermediate				
Raven's	52.33	51.46	.87			35	n.s.	-.353	n.s.
Cloze	24.17	24.38	.21			32	n.s.	-.615	n.s.
Read. Comp.	13.83	13.85	.02			38	n.s.	-.088	n.s.
					Advanced				
Raven's	49.33	46.50	3.73			23	n.s.	-.609	n.s.
Cloze	27.50	23.25	4.25			17.5	n.s.	-.855	n.s.
Read. Comp.	19.33	18.37	.96			21	n.s.	-.39	n.s.

TABLE 5

Parametric and Nonparametric t-tests

Median: Criterion for High and Low Groups

Oral Paradigmatic

Variable	High Oral Paradigmatic Mean	Low Oral Paradigmatic Mean	Difference Between Means	t-value	Level of Sign.	U-value	Level of Sign.	z	Level of Sign.
					All Subjects				
Raven's	50.61	50.07	.54	.24	n.s.				
Cloze	24.67	25.46	.79	.19	n.s.				
Read. Comp.	16.78	14.38	2.40	1.11	n.s.				
					Intermediate				
Raven's	52.27	51.00	1.27			35	n.s.	-.749	n.s.
Cloze	25.45	22.75	2.70			41.5	n.s.	-.207	n.s.
Read Comp.	15.36	11.75	3.61			31	n.s.	-1.078	.01

TABLE 6

Parametric and Nonparametric t-tests

Median: Criterion for High and Low Groups

Written Paradigmatic

Variable	High Written Paradigmatic Mean	Low Written Paradigmatic Mean	Difference Between Means	t-value	Level of Sign	U-Value	Level of Sign	z	Level of Sign
					All Subjects				
Raven's	49.90	49.45	.45	.18	n.s.				
Cloze	24.90	25.09	.19	.04	n.s.				
Read.Comp.	16.10	14.82	1.28	.60	n.s.				
					Intermediate				
Raven's	52.17	51.00	1.17			38	n.s.	-.340	n.s.
Cloze	26.00	21.43	4.57			40	n.s.	-.169	n.s.
Read. Comp.	14.58	12.57	2.01			32.5	n.s.	-.805	n.s.

Table 7

Parametric and Nonparametric t-tests

Median: Criterion for High and Low Groups

Raven's

Variable	High Raven's Mean	Low Raven's Mean	Difference Between Means	t-value	Level of Sign.	U-value	Level of Sign	z	Level of Sign
					All Subjects				
Oral Syntagmatic	14.68	12.20	2.48	.74	n.s.				
Written Syntagmatic	15.25	13.80	1.45	.46	n.s.				
Oral Paradigmatic	15.10	17.60	2.50	.73	n.s.				
Written Paradigmatic	14.57	14.40	.17	.05	n.s.				
Cloze	26.89	12.00	14.89	3.01	.01				
Read. Comp.	16.89	10.60	6.29	2.40	.05				
					Intermediate				
Oral Syntagmatic	13.92	15.17	1.25			38	n.s.	-.088	n.s.
Written Syntagmatic	15.15	14.67	.48			33.5	n.s.	-.484	n.s.
Oral Paradigmatic	15.92	14.00	1.92			34.5	n.s.	-.396	n.s.
Written Paradigmatic	14.62	13.50	1.12			38	n.s.	-.088	n.s.
Cloze	24.38	24.17	.21			27.5	n.s.	-1.009	.01
Read. Comp.	15.23	10.83	4.40			21	n.s.	-1.585	.01
					Advanced				
Oral Syntagmatic	14.67	12.00	2.67			9.5	n.s.	-.457	n.s.
Written Syntagmatic	15.25	14.00	1.25			9.5	n.s.	-.458	n.s.
Oral Paradigmatic	15.33	18.00	2.67			9.5	n.s.	-.457	n.s.
Written Paradigmatic	14.75	16.00	1.25			9.5	n.s.	-.458	n.s.
Cloze	20.33	16.00	4.33			5.5	n.s.	-1.191	.01
Read. Comp.	19.25	16.00	3.25			6.5	n.s.	-1.007	.01

TABLE 8

Parametric and Nonparametric t-tests

Mean: Criterion for High and Low Groups

Oral Syntagmatic

Variable	High Oral Syntagmatic Mean	Low Oral Syntagmatic Mean	Difference Between Means	t-value	Level of Sign.	U-value	Level of Sign.	z	Level of Sign
			All Subjects						
Raven's	49.68	50.00	.32	.12	n.s.				
Cloze	24.75	25.76	1.01	.22	n.s.				
Read. Comp.	15.68	15.15	.53	.25	n.s.				
			Intermediate						
Raven's	51.80	50.85	.95			34.5	n.s.	-.050	n.s.
Cloze	22.60	26.57	3.97			34.5	n.s.	-.050	n.s.
Read.Comp.	13.80	13.14	.66			32.5	n.s.	-.252	n.s.
			Advanced						
Raven's	46.16	49.00	2.84			11	n.s.	-1.130	.01
Cloze	28.33	24.83	3.50			14	n.s.	-.645	n.s.
Read.Comp.	18.83	17.50	1.33			13.5	n.s.	-.724	n.s.

TABLE 9

Parametric and Nonparametric t-tests

Mean; Criterion for High and Low Groups

Written Syntagmatic

Variable	High Written Syntagmatic Mean	Low Written Syntagmatic Mean	Difference Between Means	t-value	Level of Sign.	U-value	Level of Sign.	z	Level of Sign.
			All subjects						
Raven's	50.31	49.76	.55	.24	n.s.				
Cloze	24.87	24.41	.46	.11	n.s.				
Read.Comp.	17.06	14.88	2.18	1.09	n.s.				
			Intermediate						
Raven's	53.25	50.63	2.62			30	n.s.	-1.165	.01
Cloze	24.12	24.45	.33			36	n.s.	-.662	n.s.
Read.Comp.	15.38	12.72	2.66			32	n.s.	-.995	.01
			Advanced						
Raven's	47.37	48.17	.80			18	n.s.	-.779	n.s.
Cloze	25.62	24.33	1.29			22	n.s.	-.259	n.s.
Read.Comp.	18.75	18.83	.08			24	n.s.	0	n.s.

TABLE 10

Parametric t-tests

Mean; Criterion for High and Low Groups

Oral Paradigmatic

Variable	High Oral Paradigmatic Mean	Low Oral Paradigmatic Mean	Difference Between Means	t-value	Level of Sign.
				All subjects	
Raven's	50.25	49.33	.92	.38	n.s.
Cloze	24.87	24.60	.27	.06	n.s.
Read. Comp.	16.56	14.93	1.63	.81	n.s.

TABLE 11

Parametric t-tests

Mean; Criterion for High and Low Groups

Written Paradigmatic

Variable	High Written Paradigmatic Mean	Low Written Paradigmatic Mean	Difference Between Means	t-value	Level of Sign.
			All subjects		
Raven's	50.06	50.00	.06	.89	n.s.
Cloze	26.33	23.22	3.11	.78	n.s.
Reading. Comp.	15.93	15.94	.01	.004	n.s.

TABLE 12

Parametric and Nonparametric t-tests

Mean: Criterion for High and Low Groups

Raven's

Variable	High Raven's Mean	Low Raven's Mean	Difference Between Means	t-value	Level of Sign.	U-value	Level of Sign.	z	Level of Sign.
					All Subjects				
Oral Syntagmatic	13.00	16.21	3.21	1.32	n.s.				
Written Syntagmatic	14.22	16.42	2.20	.96	n.s.				
Oral Paradigmatic	16.88	13.42	3.46	1.41	n.s.				
Written Paradigmatic	15.61	12.78	2.83	1.24	n.s.				
Cloze	23.27	25.71	2.44	.59	n.s.				
Read.Comp.	16.67	14.92	1.75	.83	n.s.				
					Intermediate				
Oral Syntagmatic	12.60	15.17	2.57			26	n.s.	-.436	n.s.
Written Syntagmatic	15.90	14.67	1.23			25	n.s.	-.544	n.s.
Cloze	25.00	24.17	.83			20	n.s.	-1.085	.01
Read.Comp.	16.30	10.83	5.47			13	.05	-1.849	.01
					Advanced				
Oral Syntagmatic	11.57	15.33	3.76			15.5	n.s.	-.788	n.s.
Written Syntagmatic	12.14	16.33	4.19			11.5	n.s.	-1.363	.01
Cloze	29.17	22.14	7.03			13.5	n.s.	-1.079	.01
Read.Comp.	19.50	19.00	.50			11.5	n.s.	-1.363	.01

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TABLE 13

Nonparametric t-tests

± ISD: Criterion for High and Low Groups

Oral Syntagmatic

Variable	High Oral Syntagmatic Mean	Low Oral Syntagmatic Mean	Difference Between Means	U-value	Level of Sign.	z	Level of Sign.
				All subjects			
Raven's	51.29	53.50	2.21	12	n.s.	-1.291	.01
Cloze	26.86	22.33	4.53	14	n.s.	-1.005	.01
Read. Comp.	14.71	15.33	.62	19	n.s.	-.287	n.s.
				Intermediate			
Raven's	53.00	52.50	.50	7	n.s.		
Cloze	25.50	24.00	1.50	7.5	n.s.		
Read. Comp.	11.75	13.25	1.50	6.5	n.s.		

TABLE 14

Nonparametric t-tests

± ISD: Criterion for High and Low Groups

Written Syntagmatic

Variable	High Written Syntagmatic Mean	Low Written Syntagmatic Mean	Difference Between Means	U-value	Level of Sign.	z	Level of Sign.
					All subjects		
Raven's	52.00	51.75	.25	26.5	n.s.	-.174	n.s.
Cloze	25.57	29.37	3.80	25.5	n.s.	-.290	n.s.
Read. Comp.	15.42	17.00	1.58	20.5	n.s.	-.869	n.s.
					Intermediate		
Raven's	53.33	47.33	6.00	1	n.s.		
Cloze	29.00	32.33	3.33	3	n.s.		
Read. Comp.	12.67	12.00	.67	3.5	n.s.		

TABLE 15

Nonparametric t-tests

± ISD: Criterion for High and Low Groups

Oral Paradigmatic

Variable	High Oral Paradigmatic Mean	Low Oral Paradigmatic Mean	Difference Between Means	U-value	Level of Sign.	z	Level of Sign.
				All subjects			
Raven's	53.50	49.00	4.50	4	n.s.	-1.705	.01
Cloze	22.33	28.50	6.17	8	n.s.	-.857	n.s.
Read. Comp.	15.33	13.25	2.08	9.5	n.s.	-.534	n.s.

TABLE 16

Nonparametric t-tests

± ISD: Criterion for High and Low Groups

Written Paradigmatic

Variable	High Written Paradigmatic Mean	Low Written Paradigmatic Mean	Difference Between Means	U-value	Level of Sign.	z	Level of Sign.
					All subjects		
Raven's	51.75	50.20	1.55	17.5	n.s.	-.368	n.s.
Cloze	29.38	22.60	6.78	18	n.s.	-.294	n.s.
Read. Comp.	17.00	11.20	5.80	8	.05	-1.765	.01
					Intermediate		
Raven's	51.20	43.33	2.13	6	n.s.		
Cloze	31.80	29.00	2.80	7	n.s.		
Read. Comp.	14.80	12.67	2.13	5.5	n.s.		

TABLE 17

Nonparametric t-tests

± ISD: Criterion for High and Low Groups

Raven's

Variable	High Raven's Mean	Low Raven's Mean	Difference Between Means	U-value	Level of Sign.	z	Level of Sign.
					All subjects		
Oral Syntagmatic	10.67	12.20	1.53	12.5	n.s.	-.458	n.s.
Written Syntagmatic	13.83	13.80	.80	14.5	n.s.	-.091	n.s.
Oral Paradigmatic	19.33	17.60	1.79	13.5	n.s.	-.275	n.s.
Written Paradigmatic	16.17	14.40	1.77	12.5	n.s.	-.457	n.s.
Cloze	27.00	12.00	15.00	.5	.05	-2.652	.01
Read. Comp.	16.50	8.00	8.5	5	.05	-1.829	.01
					Intermediate		
Oral Paradigmatic	17.75	16.60	1.15	9.5	n.s.		
Written Paradigmatic	14.75	16.00	1.25	8	n.s.		

Endnotes

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The word list for the Oral Language Inventory (Appendix A) is found in Bickley, Dinnan, and Bickley (1970:292).

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